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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,083	02/21/2002	Il-kwon Kim	SAM-0304	8592

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EXAMINER	
AGUSTIN, PETER VINCENT	
ART UNIT	**PAPER NUMBER**
2652	4

DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/080,083	KIM, IL-KWON	
	Examiner	Art Unit	
	Peter Vincent Agustin	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1* is/are allowed.

6)☒ Claim(s) *11 and 12* is/are rejected.

7)☒ Claim(s) *2-10 and 13-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities:

Page 1, line 25: "refereed" should be --referred--.

Page 6, line 4: "ight" should be --light--.

Claim 2, line 3: "the frequency" should be deleted.

Claim 9, line 5: "time1T" should be --time 1T--.

Appropriate correction is required.

Claim Objections

3. Claims 2-10 objected to because of the following informalities:

Claim 2, lines 7-8: "the multiplexer" should be --the input data processing unit--.

Claims 3-10 objected to because they are dependent upon claim 2.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 11 & 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Bierhoff (US 4,813,031) in view of Yanagi et al. (hereafter Yanagi) (US 5,142,520).

In regard to claim 11, Bierhoff discloses a method for generating a radio frequency signal and control signals in which the current output from a plurality of light receiving elements (figure 1, elements 11a-11d) is converted into voltage signals (12) and the RF signal and the control signals are generated in response to the voltage signals, the method comprising the steps of: (a) performing time-sharing sampling on the voltage signals (13) and generating first digital signals (A', B' & C') in response to an analog/digital conversion clock signal (17) having a predetermined period and a sequentially applied selection signal; (b) filtering (29-31) each of the first digital signals to modify the shape of waveforms of the first digital signals and outputting the modified waveforms as second digital signals; (c) correcting delay time (26-28) of the second digital signals and generating the control signals including a focusing error and a tracking error in response to the corrected second digital signals. However, Bierhoff does not disclose step (d) correcting delay time of the second digital signals and generating the RF signal in response to the corrected second digital signals.

Yanagi discloses generating an RF signal (figure 9, element 5) in response to digital signals henerated from light receiving elements (28a-28d) in addition to generated control signals (3 & 4). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have added the RF signal generating step of Yanagi to the method of Bierhoff, the motivation being to provide accurate detection signals.

In regard to claim 12, Bierhoff discloses (a1) sequentially outputting the voltage signals in response to the selection signal (13); and (a2) sampling the voltage signals sequentially output in response to the analog/digital conversion clock signal (17), converting the sampled voltage signal into digital signals, and outputting the digital signals (A, B & C).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kim (US 6,236,628) discloses a read channel circuit for an optical disk reproducing apparatus that provides stability in servo control and reduces power consumption. Figure 1 shows light receiving elements and delay circuits.

Hofer et al. (US 4,937,440) discloses a system having six light-receiving elements with the outputs being fed to a preamp circuit and a digital signal processor.

Kamiyama (US 6,084,836) discloses a defect detection apparatus having waveform-shaping elements and phase comparators.

Tsuchinaga et al. (US 5,448,544) discloses a recording apparatus having a PLL whose output is divided by 8 to produce a timing signal.

Hayashi (US 6,009,067) discloses an apparatus having a waveform equalization circuit.

Hayashi et al. (US 5,663,945) discloses a digital phase locked loop with a digital voltage controlled oscillator.

Takahashi (US 5,986,999) discloses a tracking control device in an optical information reproducing device and a method of tracking control. Figure 1 shows digital filter and delay elements.

Allowable Subject Matter

7. Claim 1 allowed over the prior art of record.

8. Claims 2-10 would be allowable if rewritten to overcome the objection noted above.

9. Claims 13-15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

In regard to independent claim 1, no prior art of record alone or n combination discloses or suggests an apparatus for generating a radio frequency signal and control signals in which the current output from each of a plurality of light receiving elements is converted into voltage signals and the RF signal and the control signals are generated in response to the voltage signals, the apparatus comprising: an input data processing unit for performing time-sharing sampling on the voltage signals and converting the voltage signals into first digital signals in response to an analog/digital conversion clock signal having a predetermined period and a sequentially applied selection signal; a digital filter for filtering each of the first digital signals to modify the shape of the waveforms of the first digital signals and outputting the modified waveforms as second digital signals; a servo signal generating unit for correcting delay time of the second digital signals and generating the control signal for servo control in response to the corrected second digital signals; a digital RF data generating unit for correcting delay time of the second digital signals before summing the corrected second digital signals to generate digital RF data; and **a reference comparator for comparing an average value of the digital RF data with the voltage level of the digital RF data in response to a predetermined demodulation clock signal and generating a non-return to zero (NRZ) signal in response to a compared result.**

In regard to claim 13, no prior art of record alone or in combination discloses or suggests a method for generating a radio frequency signal and control signals comprising the steps of

sampling voltage signals and generating first digital signals in response to an analog/digital conversion clock signal; filtering and outputting the modified waveforms of the first digital signals; correcting delay time and generating the control signals and an RF signal; and further comprising the steps of **delaying first and second signals having a different delay time by the time 1T, where 1T is a channel bit clock period, and outputting delayed first and second signals, respectively**; and **subtracting the sum of the delayed second signal and a fourth signal from the sum of the delayed first signal and a third signal and generating the focusing error**, in the case where the second signals are the first through fourth signals; **determining a phase difference between the sum of the delayed first signal and the third signal and the sum of the delayed second signal and the fourth signal and generating the tracking error in response to the determined result**.

Claims 2-10, 14 & 15 are allowable because they are dependent upon allowable base claims.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is (703) 305-8980. The examiner can normally be reached on Monday thru Friday 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PVA
05/06/2004

W. R. YOUNG
PRIMARY EXAMINER